Investigation the Effect of Cash Flow Volatility and Financial Leverage on Earnings Management in the Context of Listed Companies in Tehran Stock Exchange (Iran)

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Abstract

The objective of this study is to evaluate the effect of cash flow volatility and financial leverage on earnings management in companies listed on the Tehran Stock Exchange (TSE). The calculation of cash flow volatility is done by the standard deviation of cash flows and measurement of earnings management rate by companies is done through a modified Jones model. For testing the hypotheses of research and examining the relationship between variables, the data of 90 companies listed on the Tehran Stock Exchange (TSE) in the period of 1386-1390 (2007-2011) were used as sample and the analysis of the combined data is done in the form of multivariable regression. In order to estimate the suitable models of hypotheses testing in combined data, Chow and Hausman tests were used. Generally, The results of models estimation suggest the confirmation of research hypotheses. Therefore, “cash flow fluctuations” in studied companies has significant positive effect and “leverage ratio” has significant negative effect on earnings management.

Keywords: earnings management, cash flow volatility, financial leverage.
1. Introduction

Accepted accounting principles allow many financial transactions to be recorded with one or several methods. Three beneficiary groups in every company are: directors, shareholders and creditors. It should be noted that, according to agency theory, both directors and shareholders (owners) are trying to increase their benefits. Shareholders control company’s profit since their wealth increases with an increase in profit. But the profit is always subject to manipulation by management. On the contrary, it can be argued that all beneficiary groups in the company, pay special attention to cash flow because they see their interest in cash flow output. In fact, investors basically invest their cash in common stock and profit units to achieve more cash and more cash profit. On the other hand, creditors pay more attention to cash flow information than profit and loss.

2. Theoretical foundations of research

Reported operating cash flow indicates the company’s ability to generate cash flow. On the one hand, managers have greater awareness about the company, so it is expected from them to provide such information which best reflects the company’s status. On the other hand, for several reasons such as employee retention, receiving bonuses and other factors, intentionally or unintentionally, managers show the company’s status as desirable. When the cash flow fluctuations are higher during different periods, shareholders and other beneficiary groups in the company will feel more risk and uncertainty. Therefore, the director may pay attention to the profit and manipulate or manage it, in order to gain the confidence of actual and potential investors. The main indicator to evaluate the divided policy is financial leverage ratio. In this study, we attempt to examine empirically the effect of cash flow volatility and financial leverage ratio on earnings management in companies listed on the Tehran Stock Exchange (TSE).

3. Research history

Bandia (2012), through a research on listed companies on India Stock Exchange, has carried out a survey on the relationship between free cash flow and earnings management. The results of research showed that a significant positive relationship exists between earnings management and free cash flow.

Aja and brossa (2014) in their research on 9776 companies in USA, have done a survey on the relationship between cash flow volatility, financial leverage and earnings management and concluded that cash flow volatility has significant positive relationship with earnings management and leverage ratio has negative significant relationship with earnings management.

Fatma and Chichti (2014) in a research with the subject of survey on the relationship between ownership structure, financing policy and free cash flow in the period of 1999-2008 on 35 listed companies on Tunisia Stock Exchange, concluded that the financial leverage ratio and ownership of managers ratio have direct relationship with free cash flow and concentration of
ownership and the proportion of institutional shareholders have opposite relationship with free cash flow. Lio (2014), in a research with the title of “The role of dividend policy on the real earnings managements” has done a survey on the role of dividend policy on real earnings management. The results of research showed that when the profit was managed in advance, it becomes smaller than previous year dividend. Assef, Rassoul and Kamal (2014) have also done a survey on the effect of financial leverage on dividend policy in companies of Karachi. The results of their research showed a significant negative relationship between financial leverage and amount of dividend.

And also in Iran, Nourosh and others (1384) by using the ratio of debt to capital and effective tax rate have approved that with development in companies, directors tend more and more to manage earnings.

4. Hypotheses of research

According to theoretical foundations and previous researches, hypotheses are formulated as follows:

First hypothesis: Cash flow volatility has significant impact on earnings management.

Second hypothesis: Leverage ratio has significant impact on earnings management.

5. Models and variables of research

Models developed to test the hypotheses of research and examine the relationship between the variables of research are in the form of models 1 and 2.

\[
EM_{it} = \alpha_i + \beta CFV_{it} + \beta MB_{it} + \beta Tangible_{it} + \beta SIZE_{it} + \beta ROA_{it} + \beta Sales_{it} + \epsilon_i 
\]

\[
EM_{it} = \alpha_i + \beta BL_{it} + \beta MB_{it} + \beta Tangible_{it} + \beta SIZE_{it} + \beta ROA_{it} + \beta Sales_{it} + \epsilon_i 
\]

Model 1 is used for testing first hypothesis and model 2 is used for testing second hypothesis. In these models, market to book ratio, intangible assets, size of company, return on assets and sales are also used as control variables.

EM: (Dependent variable) Earnings management; BL: (Independent variable) Leverage ratio; CFV: (Independent variable) Cash flow volatility; MB: (Control variable) Market to book ratio; Tangible: (Control variable) Represents the intangible assets to total assets ratio; SIZE: (Control variable) Size of the company; Sales: (Control variable) Represents the company’s sales; The amount of estimated error in the model.
6. Research methodology

In the dimension of objective, the present research is an applied research and in the dimension of nature and methods, that is a descriptive correlational research. This research has been done based on quasi-experimental research design and by using casual approach. The combination of data approach is used to analyze the data and estimate the models of research.

7. Statistical population

The statistical population in this study: All listed companies on the Teheran Stock Exchange (TSE) in the period of 1386-1390 (2007-2011), these companies have maintained their membership during this period.

After studying listed companies on the Tehran Stock Exchange and applying the above conditions and restrictions, a total of 90 companies have been selected for estimating models and testing the hypotheses of research.

8. Research findings

8.1. Descriptive statistics of research

Descriptive statistics, dependent and independent variables of research including: average, median, maximum, minimum and standard deviation are the data of research which have been calculated and then presented in table 1. The mentioned amounts provide an overview of the status of data distribution of this research.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Average</th>
<th>Median</th>
<th>Maximum</th>
<th>Minimum</th>
<th>Standard deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Earnings management (Discretionary accruals)</td>
<td>EM</td>
<td>0.026</td>
<td>0.083</td>
<td>3.68</td>
<td>-4.06</td>
</tr>
<tr>
<td>Cash flow volatility</td>
<td>CFV</td>
<td>0.063</td>
<td>0.056</td>
<td>0.864</td>
<td>-0.266</td>
</tr>
<tr>
<td>Leverage ratio</td>
<td>FL</td>
<td>0.326</td>
<td>0.361</td>
<td>0.894</td>
<td>-0.048</td>
</tr>
<tr>
<td>Market to book ratio</td>
<td>MB</td>
<td>1.429</td>
<td>1.866</td>
<td>12.344</td>
<td>-4.586</td>
</tr>
<tr>
<td>Intangible assets ratio</td>
<td>Tangible</td>
<td>0.198</td>
<td>0.281</td>
<td>0.384</td>
<td>0.027</td>
</tr>
<tr>
<td>Size of the company</td>
<td>SIZE</td>
<td>6.268</td>
<td>5.967</td>
<td>8.926</td>
<td>4.766</td>
</tr>
<tr>
<td>Sales ratio</td>
<td>Sales</td>
<td>0.086</td>
<td>0.114</td>
<td>0.329</td>
<td>0.006</td>
</tr>
</tbody>
</table>

Source: Researcher calculations
8.2. Testing of research hypotheses

To examine the kind of test, in different sections and time periods of mixed data, F Limer test (CHOW) was used, and is visible in table 2.

### Table (2): Chow test results

<table>
<thead>
<tr>
<th>Kind of test</th>
<th>Test statistic (p-value)</th>
<th>Result of test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chow test</td>
<td>1.482 (0.164)</td>
<td>Viscous effects model</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pooled data</td>
</tr>
<tr>
<td>Chow test</td>
<td>1.139 (0.286)</td>
<td>Viscous effects model</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pooled data</td>
</tr>
</tbody>
</table>

Source: Researcher calculations

Chow test results in both models have approved null hypothesis of this test: The similar y-intercept in all periods. Therefore, pooled data (viscous effects model) should be used to test the models of research.

8.2.1. First hypothesis testing

The first hypothesis of this research examines the impact of cash flow volatility on earnings management. As can be seen in table, F statistic is significant, with confidence level of 99%. So it is concluded that the model of research was significant in general, and the independent variables in the model are able to explain the dependent variable of the model (earnings management).

### Table (3): Results of the estimation of the first model of research

\[
EM_{it} = \alpha_0 + \beta_1 CFV_{it} + \beta_2 MB_{it} + \beta_3 T_indible_{it} + \beta_4 SIZE_{it} + \beta_5 Sales_{it} + \varepsilon_{it}
\]

<table>
<thead>
<tr>
<th>p-value</th>
<th>t-static</th>
<th>correlation</th>
<th>factor</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.0000</td>
<td>-4.0216</td>
<td>-0.0984</td>
<td>(\alpha_0)</td>
<td>Constant factor</td>
</tr>
<tr>
<td>0.0041</td>
<td>3.4356</td>
<td>0.2493</td>
<td>(\beta_1)</td>
<td>CFV</td>
</tr>
<tr>
<td>0.0425</td>
<td>3.8857</td>
<td>0.0856</td>
<td>(\beta_2)</td>
<td>MB</td>
</tr>
<tr>
<td>0.5984</td>
<td>1.6629</td>
<td>0.2363</td>
<td>(\beta_3)</td>
<td>Tangible</td>
</tr>
</tbody>
</table>
According to the values of T statistics, related to the independent variable CFV, and its significance level (p-value) in the table 3 and given that the considered error level for this research was 0.05, the variable coefficient of “fluctuations in cash” (0.2439) was significant with the confidence level of 99%. The coefficient of this variable is positive. As a result, fluctuations in operating cash have opposite effect on earnings management. In other words, by increasing the volatility of cash in the companies of the sample, “discretionary accruals” as an indicator of measuring the earnings management in aforementioned companies, has increased. So the first hypothesis of this research has been conformed.

8.2.2. Second hypothesis testing

The second hypothesis examines the impact of leverage ratio on earnings management.

As can bee seen in the table, F statistic, is significant with confidence level of 99%. So it is concluded that the research model was generally significant, and independent variables in the model are able to explain the dependent variable (earnings management).

Table (4): Results of estimation of the second model of research

<table>
<thead>
<tr>
<th>p-value</th>
<th>t-static</th>
<th>correlation</th>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.0000</td>
<td>-4.2718</td>
<td>-0.0372</td>
<td>α₀</td>
<td>Constant factor</td>
</tr>
<tr>
<td>0.0000</td>
<td>-4.6988</td>
<td>-0.4366</td>
<td>β₁</td>
<td>FL</td>
</tr>
<tr>
<td>0.0273</td>
<td>4.0983</td>
<td>0.1128</td>
<td>β₂</td>
<td>MB</td>
</tr>
<tr>
<td>0.2633</td>
<td>1.6403</td>
<td>0.3382</td>
<td>β₃</td>
<td>Tangible</td>
</tr>
</tbody>
</table>
According to the results of table 4, t statistic related to independent variable FL and its significance level (p-value), the variable coefficient of financial leverage ratio (-0.4366) was significant. Given that the achieved significance level for this variable was less than 0.01, so about this independent variable it can be concluded that financial leverage ratio had significant effect on earnings management with confidence level of 99%. So the second hypothesis of research has been confirmed.

9. Conclusion

The results of estimation of regression model of research showed that the coefficient of first independent variable in model (the cash flow volatility) was significant. In other words, the research findings approved this hypothesis. So it can be concluded that “operating cash flow fluctuations in listed companies on the Tehran Stock Exchange (TSE)” has a significant positive effect on the rate of earnings management. The results of testing of the first hypothesis of research are similar to the results of the researches done by Aja and Brossa (2014). They also believed that cash flow fluctuations have a significant positive relationship with earnings management.

The results of regression model estimation of research show that the coefficient of second independent variable (financial leverage ratio or dept to assets ratio) is significant and financial leverage on discretionary accruals as the indicator of earnings management has a negative and opposite effect. In other words, the research findings have approved this hypothesis.

This result can be argued in the way that a high leverage ratio makes more financial costs for the company that must be paid during the year. As a result, it can be argued that the financial leverage ratio in the surveyed companies have a significant negative impact on earnings management. The results of the research first hypothesis test are similar to the results of the research of Aja and Brossa (2014).
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